

## SEQUENCE LISTING

<110> McCarthy, Sean A.  
 Holtzman, Douglas A.  
 Goodearl, Andrew D.J.

<120> NOVEL GENES ENCODING PROTEINS HAVING  
 PROGNOSTIC, DIAGNOSTIC, PREVENTIVE, THERAPEUTIC AND OTHER  
 USES

<130> 07334-325001

<150> US 09/128,709  
 <151> 1998-08-04

<150> US 60/054,645  
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<150> US 09/130,491  
 <151> 1998-08-06

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 <151> 1997-09-05

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gtg acc tcc aat gct gcc ctc act ctg cgg aac ttt tgc aac tgg cag 95  
 Val Thr Ser Asn Ala Ala Leu Thr Leu Arg Asn Phe Cys Asn Trp Gln  
 20 25 30

aag cag cac aac cca ccc agt gac cgg gat gca gag cac tat gac aca 143

Lys Gln His Asn Pro Pro Ser Asp Arg Asp Ala Glu His Tyr Asp Thr			
35	40	45	
gca att ctt ttc acc aga cag gac ttg tgt ggg tcc cag aca tgt gat			191
Ala Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Ser Gln Thr Cys Asp			
50	55	60	
act ctt ggg atg gct gat gtt gga act gtg tgt gat ccg agc aga agc			239
Thr Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp Pro Ser Arg Ser			
65	70	75	
tgc tcc gtc ata gaa gat gat ggt tta caa gct gcc ttc acc aca gcc			287
Cys Ser Val Ile Glu Asp Asp Gly Leu Gln Ala Ala Phe Thr Thr Ala			
80	85	90	95
cat gaa tta ggc cac gtg ttt aac atg cca cat gat gat gca aag cag			335
His Glu Leu Gly His Val Phe Asn Met Pro His Asp Asp Ala Lys Gln			
100	105	110	
tgt gcc agc ctt aat ggt gtg aac cag gat tcc cac atg atg gcg tca			383
Cys Ala Ser Leu Asn Gly Val Asn Gln Asp Ser His Met Met Ala Ser			
115	120	125	
atg ctt tcc aac ctg gac cac agc cag cct tgg tct cct tgc agt gcc			431
Met Leu Ser Asn Leu Asp His Ser Gln Pro Trp Ser Pro Cys Ser Ala			
130	135	140	
tac atg att aca tca ttt ctg gat aat ggt cat ggg gaa tgt ttg atg			479
Tyr Met Ile Thr Ser Phe Leu Asp Asn Gly His Gly Glu Cys Leu Met			
145	150	155	
gac aag cct cag aat ccc ata cag ctc cca ggc gat ctc cct ggc acc			527
Asp Lys Pro Gln Asn Pro Ile Gln Leu Pro Gly Asp Leu Pro Gly Thr			
160	165	170	175
tcg tac gat gcc aac cgg cag tgc cag ttt aca ttt ggg gag gac tcc			575
Ser Tyr Asp Ala Asn Arg Gln Cys Gln Phe Thr Phe Gly Glu Asp Ser			
180	185	190	
aaa cac tgc ccc gat gca gcc agc aca tgt agc acc ttg tgg tgt acc			623
Lys His Cys Pro Asp Ala Ala Ser Thr Cys Ser Thr Leu Trp Cys Thr			
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ggc acc tct ggt ggg gtg ctg gtg tgt caa acc aaa cac ttc ccg tgg			671
Gly Thr Ser Gly Val Leu Val Cys Gln Thr Lys His Phe Pro Trp			
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gcg gat ggc acc agc tgt gga gaa ggg aaa tgg tgt atc aac ggc aag			719
Ala Asp Gly Thr Ser Cys Gly Glu Gly Lys Trp Cys Ile Asn Gly Lys			
225	230	235	
tgt gtg aac aaa acc gac aga aag cat ttt gat acg cct ttt cat gga			767
Cys Val Asn Lys Thr Asp Arg Lys His Phe Asp Thr Pro Phe His Gly			
240	245	250	255
agc tgg gga atg tgg ggg cct tgg gga gac tgt tcg aga acg tgc ggt			815
Ser Trp Gly Met Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys Gly			

260

265

270

gga gga gtc cag tac acg atg agg gaa tgt gac aac cca gtc cca aag			863
Gly Gly Val Gln Tyr Thr Met Arg Glu Cys Asp Asn Pro Val Pro Lys			
275	280	285	
aat gga ggg aag tac tgt gaa ggc aaa cga gtg cgc tac aga tcc tgt			911
Asn Gly Gly Lys Tyr Cys Glu Gly Lys Arg Val Arg Tyr Arg Ser Cys			
290	295	300	
aac ctt gag gac tgt cca gac aat aat gga aaa acc ttt aga gag gaa			959
Asn Leu Glu Asp Cys Pro Asp Asn Asn Gly Lys Thr Phe Arg Glu Glu			
305	310	315	
caa tgt gaa gca cac aac gag ttt tca aaa gct tcc ttt ggg agt ggg			1007
Gln Cys Glu Ala His Asn Glu Phe Ser Lys Ala Ser Phe Gly Ser Gly			
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cct gcg gtg gaa tgg att ccc aag tac gct ggc gtc tca cca aag gac			1055
Pro Ala Val Glu Trp Ile Pro Lys Tyr Ala Gly Val Ser Pro Lys Asp			
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agg tgc aag ctc atc tgc caa gcc aaa ggc att ggc tac ttc ttc gtt			1103
Arg Cys Lys Leu Ile Cys Gln Ala Lys Gly Ile Gly Tyr Phe Phe Val			
355	360	365	
ttg cag ccc aag gtt gta gat ggt act cca tgt agc cca gat tcc acc			1151
Leu Gln Pro Lys Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser Thr			
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tct gtc tgt gtg caa gga cag tgt gta aaa gct ggt tgt gat cgc atc			1199
Ser Val Cys Val Gln Gly Gln Cys Val Lys Ala Gly Cys Asp Arg Ile			
385	390	395	
ata gac tcc aaa aag aag ttt gat aaa tgt ggt gtt tgc ggg gga aat			1247
Ile Asp Ser Lys Lys Lys Phe Asp Lys Cys Gly Val Cys Gly Gly Asn			
400	405	410	415
gga tct act tgt aaa aaa ata tca gga tca gtt act agt gca aaa cct			1295
Gly Ser Thr Cys Lys Ile Ser Gly Ser Val Thr Ser Ala Lys Pro			
420	425	430	
gga tat cat gat atc atc aca att cca act gga gcc acc aac atc gaa			1343
Gly Tyr His Asp Ile Ile Thr Ile Pro Thr Gly Ala Thr Asn Ile Glu			
435	440	445	
gtg aaa cag cgg aac cag agg gga tcc agg aac aat ggc agc ttt ctt			1391
Val Lys Gln Arg Asn Gln Arg Gly Ser Arg Asn Asn Gly Ser Phe Leu			
450	455	460	
gcc atc aaa gct gct gat ggc aca tat att ctt aat ggt gac tac act			1439
Ala Ile Lys Ala Ala Asp Gly Thr Tyr Ile Leu Asn Gly Asp Tyr Thr			
465	470	475	
ttg tcc acc tta gag caa gac att atg tac aaa ggt gtt gtc ttg agg			1487
Leu Ser Thr Leu Glu Gln Asp Ile Met Tyr Lys Gly Val Val Leu Arg			
480	485	490	495

tac agc ggc tcc tct gcg gca ttg gaa aga att cgc agc ttt agc cct		1535
Tyr Ser Gly Ser Ser Ala Ala Leu Glu Arg Ile Arg Ser Phe Ser Pro		
500	505	510
ctc aaa gag ccc ttg acc atc cag gtt ctt act gtg ggc aat gcc ctt		1583
Leu Lys Glu Pro Leu Thr Ile Gln Val Leu Thr Val Gly Asn Ala Leu		
515	520	525
cga cct aaa att aaa tac acc tac ttc gta aag aag aag gaa tct		1631
Arg Pro Lys Ile Lys Tyr Thr Tyr Phe Val Lys Lys Lys Glu Ser		
530	535	540
ttc aat gct atc ccc act ttt tca gca tgg gtc att gaa gag tgg ggc		1679
Phe Asn Ala Ile Pro Thr Phe Ser Ala Trp Val Ile Glu Glu Trp Gly		
545	550	555
gaa tgt tct aag acc tgt ggg aag ggt tac aaa aaa aga agc ttg aag		1727
Glu Cys Ser Lys Thr Cys Gly Lys Gly Tyr Lys Lys Arg Ser Leu Lys		
560	565	570
575		
tgt ctg tcc cat gat gga ggg gtg tta tct cat gag agc tgt gat cct		1775
Cys Leu Ser His Asp Gly Gly Val Leu Ser His Glu Ser Cys Asp Pro		
580	585	590
tta aag aaa cct aaa cat ttc ata gac ttt tgc aca atg gca gaa tgc		1823
Leu Lys Lys Pro Lys His Phe Ile Asp Phe Cys Thr Met Ala Glu Cys		
595	600	605
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Ser		
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aggtgtatca gtaaggtggg attatgggg tagatagaaa aggagttgaa tc当地 catcagagt		1996
aaactgcccag ttgcaaaattt gataggataag tt当地 tagtggagaa tt当地 attaaacct ctgagcagtg		2056
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gaaataacgc aaatggcttc ct当地 ttcccttctt ttttggacca tctcagtc当地 tt当地 ttgtta		2476
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gtaaaatatg ttactataaa ttacatgtac tt当地 tataagta ttgggttggg tgc当地 ttcccttcc		2956
aagaaggact atagtttagta ataaatgcct ataataacat atttattttt atacatttt		3016
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			20				25						30		
Gln	His	Asn	Pro	Pro	Ser	Asp	Arg	Asp	Ala	Glu	His	Tyr	Asp	Thr	Ala
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Ile	Leu	Phe	Thr	Arg	Gln	Asp	Leu	Cys	Gly	Ser	Gln	Thr	Cys	Asp	Thr
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Leu	Gly	Met	Ala	Asp	Val	Gly	Thr	Val	Cys	Asp	Pro	Ser	Arg	Ser	Cys
	65					70			75			80			
Ser	Val	Ile	Glu	Asp	Asp	Gly	Leu	Gln	Ala	Ala	Phe	Thr	Thr	Ala	His
		85					90					95			
Glu	Leu	Gly	His	Val	Phe	Asn	Met	Pro	His	Asp	Asp	Ala	Lys	Gln	Cys
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Ala	Ser	Leu	Asn	Gly	Val	Asn	Gln	Asp	Ser	His	Met	Met	Ala	Ser	Met
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Leu	Ser	Asn	Leu	Asp	His	Ser	Gln	Pro	Trp	Ser	Pro	Cys	Ser	Ala	Tyr
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Met	Ile	Thr	Ser	Phe	Leu	Asp	Asn	Gly	His	Gly	Glu	Cys	Leu	Met	Asp
	145					150					155			160	
Lys	Pro	Gln	Asn	Pro	Ile	Gln	Leu	Pro	Gly	Asp	Leu	Pro	Gly	Thr	Ser
		165					170					175			
Tyr	Asp	Ala	Asn	Arg	Gln	Cys	Gln	Phe	Thr	Phe	Gly	Glu	Asp	Ser	Lys
		180					185					190			
His	Cys	Pro	Asp	Ala	Ala	Ser	Thr	Cys	Ser	Thr	Leu	Trp	Cys	Thr	Gly
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Thr	Ser	Gly	Gly	Val	Leu	Val	Cys	Gln	Thr	Lys	His	Phe	Pro	Trp	Ala
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Asp	Gly	Thr	Ser	Cys	Gly	Glu	Gly	Lys	Trp	Cys	Ile	Asn	Gly	Lys	Cys
	225					230					235			240	
Val	Asn	Lys	Thr	Asp	Arg	Lys	His	Phe	Asp	Thr	Pro	Phe	His	Gly	Ser
		245					250					255			
Trp	Gly	Met	Trp	Gly	Pro	Trp	Gly	Asp	Cys	Ser	Arg	Thr	Cys	Gly	Gly
		260				265					270				
Gly	Val	Gln	Tyr	Thr	Met	Arg	Glu	Cys	Asp	Asn	Pro	Val	Pro	Lys	Asn
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Gly	Gly	Lys	Tyr	Cys	Glu	Gly	Lys	Arg	Val	Arg	Tyr	Arg	Ser	Cys	Asn
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Leu	Glu	Asp	Cys	Pro	Asp	Asn	Asn	Gly	Lys	Thr	Phe	Arg	Glu	Glu	Gln
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Cys	Glu	Ala	His	Asn	Glu	Phe	Ser	Lys	Ala	Ser	Phe	Gly	Ser	Gly	Pro
		325					330					335			
Ala	Val	Glu	Trp	Ile	Pro	Lys	Tyr	Ala	Gly	Val	Ser	Pro	Lys	Asp	Arg
		340				345						350			
Cys	Lys	Leu	Ile	Cys	Gln	Ala	Lys	Gly	Ile	Gly	Tyr	Phe	Phe	Val	Leu
		355					360					365			
Gln	Pro	Lys	Val	Val	Asp	Gly	Thr	Pro	Cys	Ser	Pro	Asp	Ser	Thr	Ser
	370					375					380				
Val	Cys	Val	Gln	Gly	Gln	Cys	Val	Lys	Ala	Gly	Cys	Asp	Arg	Ile	Ile
	385					390					395			400	
Asp	Ser	Lys	Lys	Lys	Phe	Asp	Lys	Cys	Gly	Val	Cys	Gly	Gly	Asn	Gly
		405					410					415			
Ser	Thr	Cys	Lys	Lys	Ile	Ser	Gly	Ser	Val	Thr	Ser	Ala	Lys	Pro	Gly

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Tyr His Asp Ile Ile Thr Ile Pro Thr Gly Ala Thr Asn Ile Glu Val		
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Lys Gln Arg Asn Gln Arg Gly Ser Arg Asn Asn Gly Ser Phe Leu Ala		
450	455	460
Ile Lys Ala Ala Asp Gly Thr Tyr Ile Leu Asn Gly Asp Tyr Thr Leu		
465	470	475
Ser Thr Leu Glu Gln Asp Ile Met Tyr Lys Gly Val Val Leu Arg Tyr		
485	490	495
Ser Gly Ser Ser Ala Ala Leu Glu Arg Ile Arg Ser Phe Ser Pro Leu		
500	505	510
Lys Glu Pro Leu Thr Ile Gln Val Leu Thr Val Gly Asn Ala Leu Arg		
515	520	525
Pro Lys Ile Lys Tyr Thr Tyr Phe Val Lys Lys Lys Glu Ser Phe		
530	535	540
Asn Ala Ile Pro Thr Phe Ser Ala Trp Val Ile Glu Glu Trp Gly Glu		
545	550	555
Cys Ser Lys Thr Cys Gly Lys Gly Tyr Lys Lys Arg Ser Leu Lys Cys		
565	570	575
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gagcaagagg atg ctg gcg ggg ggc gtg agg agc atg ccc agc ccc ctc  
Met Leu Ala Gly Gly Val Arg Ser Met Pro Ser Pro Leu  
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ctg gcc tgc tgg cag ccc atc ctc ctg gtg ctg ggc tca gtg ctg  
Leu Ala Cys Trp Gln Pro Ile Leu Leu Val Leu Gly Ser Val Leu  
15 20 25

tca ggc tcg gcc acg ggc tgc ccg ccc cgc tgc gag tgc tcc gcc cag  
Ser Gly Ser Ala Thr Gly Cys Pro Pro Arg Cys Glu Cys Ser Ala Gln  
30 35 40 45

gac cgc gct gtg tgc tgc cac cgc aag cgc ttt gtg gca gtc ccc gag  
Asp Arg Ala Val Leu Cys His Arg Lys Arg Phe Val Ala Val Pro Glu  
50 55 60

ggc atc ccc acc gag acg cgc ctg ctg gac cta ggc aag aac cgc atc  
Gly Ile Pro Thr Glu Thr Arg Leu Leu Asp Leu Gly Lys Asn Arg Ile  
65 70 75

aaa acg ctc aac cag gac gag ttc gcc agc ttc ccg cac ctg gag gag

Lys	Thr	Leu	Asn	Gln	Asp	Glu	Phe	Ala	Ser	Phe	Pro	His	Leu	Glu	Glu	
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ctg	gag	ctc	aac	gag	aac	atc	gtg	agc	gcc	gtg	gag	ccc	ggc	gcc	ttc	457
Leu	Glu	Leu	Asn	Glu	Asn	Ile	Val	Ser	Ala	Val	Glu	Pro	Gly	Ala	Phe	
95						100					105					
aac	aac	ctc	ttc	aac	ctc	cg	ac	ctg	ggt	ctc	cg	agc	aac	cg	ctg	505
Asn	Asn	Leu	Phe	Asn	Leu	Arg	Thr	Leu	Gly	Leu	Arg	Ser	Asn	Arg	Leu	
110						115					120			125		
aag	ctc	atc	ccg	cta	ggc	gtc	ttc	act	ggc	ctc	agc	aac	ctg	acc	aag	553
Lys	Leu	Ile	Pro	Leu	Gly	Val	Phe	Thr	Gly	Leu	Ser	Asn	Leu	Thr	Lys	
130						135					140					
ctg	gac	ac	agg	gag	aac	aag	atc	gtt	atc	cta	ctg	gac	tac	atg	ttt	601
Leu	Asp	Thr	Arg	Glu	Asn	Lys	Ile	Val	Ile	Leu	Leu	Asp	Tyr	Met	Phe	
145						150					155					
cag	gac	ctg	tac	aac	ctc	aag	tca	ctg	gag	gtt	ggc	gac	aat	gac	ctc	649
Gln	Asp	Leu	Tyr	Asn	Leu	Lys	Ser	Leu	Glu	Val	Gly	Asp	Asn	Asp	Leu	
160						165					170					
gtc	tac	atc	tct	cac	cg	cc	ttc	agc	gg	ctc	aac	agc	ctg	gag	cag	697
Val	Tyr	Ile	Ser	His	Arg	Ala	Phe	Ser	Gly	Leu	Asn	Ser	Leu	Glu	Gln	
175						180					185					
ctg	act	ctg	gag	aaa	tgc	aac	ctg	acc	tcc	atc	ccc	acc	gag	g	ctg	745
Leu	Thr	Leu	Glu	Lys	Cys	Asn	Leu	Thr	Ser	Ile	Pro	Thr	Glu	Ala	Leu	
190						195					200			205		
tcc	cac	ctg	cac	gg	ctc	atc	gtc	ctg	agg	ctc	cg	cac	ctc	aac	atc	793
Ser	His	Leu	His	Gly	Leu	Ile	Val	Leu	Arg	Leu	Arg	His	Leu	Asn	Ile	
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aat	gcc	atc	cg	gac	ta	c	tcc	ttc	aag	agg	ctg	ta	cg	ctc	aag	841
Asn	Ala	Ile	Arg	Asp	Tyr	Ser	Phe	Lys	Arg	Leu	Tyr	Arg	Leu	Lys	Val	
225						230					235					
ttg	gag	atc	tcc	cac	tgg	ccc	ta	tc	tg	gac	acc	atg	aca	ccc	aac	889
Leu	Glu	Ile	Ser	His	Trp	Pro	Tyr	Leu	Asp	Thr	Met	Thr	Pro	Asn	Cys	
240						245					250					
ctc	tac	gg	ctc	aac	ctg	ac	tcc	ctg	tcc	atc	aca	cac	tgc	aat	ctg	937
Leu	Tyr	Gly	Leu	Asn	Leu	Thr	Ser	Leu	Ser	Ile	Thr	His	Cys	Asn	Leu	
255						260					265					
acc	gct	gt	ccc	ta	ctg	gg	cc	tc	cg	cac	ct	ta	tc	cg	tt	985
Thr	Ala	Val	Pro	Tyr	Leu	Ala	Val	Arg	His	Leu	Val	Tyr	Leu	Arg	Phe	
270						275					280			285		
ctc	aa	ctc	tcc	ta	cc	atc	ac	tg	cc	at	g	gg	tc	at	tg	1033
Leu	Asn	Leu	Ser	Tyr	Asn	Pro	Ile	Ser	Thr	Ile	Glu	Gly	Ser	Met	Leu	
290						295					300					
cat	gag	ct	ctc	cg	ctg	cag	gag	atc	ca	tg	gt	gg	gg	cag	ctg	1081
His	Glu	Leu	Leu	Arg	Leu	Gln	Glu	Ile	Gln	Leu	Val	Gly	Gly	Gln	Leu	

305

310

315

gcc gtg gtg gag ccc tat gcc ttc cgc ggc ctc aac tac ctg cgc gtg Ala Val Val Glu Pro Tyr Ala Phe Arg Gly Leu Asn Tyr Leu Arg Val	320	325	330	1129
ctc aat gtc tct ggc aac cag ctg acc aca ctg gag gaa tca gtc ttc Leu Asn Val Ser Gly Asn Gln Leu Thr Thr Leu Glu Glu Ser Val Phe	335	340	345	1177
cac tcg gtg ggc aac ctg gag aca ctc atc ctg gac tcc aac ccg ctg His Ser Val Gly Asn Leu Glu Thr Leu Ile Leu Asp Ser Asn Pro Leu	350	355	360	1225
gcc tgc gac tgt cggt ctc ctg tgg gtg ttc cgg cgc cgc tgg cgg ctc Ala Cys Asp Cys Arg Leu Leu Trp Val Phe Arg Arg Arg Trp Arg Leu	370	375	380	1273
aac ttc aac cgg cag cag ccc acg tgc gcc acg ccc gag ttt gtc cag Asn Phe Asn Arg Gln Gln Pro Thr Cys Ala Thr Pro Glu Phe Val Gln	385	390	395	1321
ggc aag gag ttc aag gac ttc cct gat gtg cta ctg ccc aac tac ttc Gly Lys Glu Phe Lys Asp Phe Pro Asp Val Leu Leu Pro Asn Tyr Phe	400	405	410	1369
acc tgc cgc cgc gcc cgc atc cgg gac cgc aag gcc cag cag gtg ttt Thr Cys Arg Arg Ala Arg Ile Arg Asp Arg Lys Ala Gln Gln Val Phe	415	420	425	1417
gtg gac gag ggc cac acg gtg cag ttt gtg tgc cgg gcc gat ggc gac Val Asp Glu Gly His Thr Val Gln Phe Val Cys Arg Ala Asp Gly Asp	430	435	440	1465
ccg ccg ccc gcc atc ctc tgg ctc tca ccc cga aag cac ctg gtc tca Pro Pro Pro Ala Ile Leu Trp Leu Ser Pro Arg Lys His Leu Val Ser	450	455	460	1513
gcc aag agc aat ggg cgg ctc aca gtc ttc cct gat ggc acg ctg gag Ala Lys Ser Asn Gly Arg Leu Thr Val Phe Pro Asp Gly Thr Leu Glu	465	470	475	1561
gtg cgc tac gcc cag gta cag gac aac ggc acg tac ctg tgc atc gcg Val Arg Tyr Ala Gln Val Gln Asp Asn Gly Thr Tyr Leu Cys Ile Ala	480	485	490	1609
gcc aac gcg ggc ggc aac gac tcc atg ccc gcc cac ctg cat gtg cgc Ala Asn Ala Gly Gly Asn Asp Ser Met Pro Ala His Leu His Val Arg	495	500	505	1657
agc tac tcg ccc gac tgg ccc cat cag ccc aac aag acc ttc gct ttc Ser Tyr Ser Pro Asp Trp Pro His Gln Pro Asn Lys Thr Phe Ala Phe	510	515	520	1705
atc tcc aac cag ccg ggc gag gga gag gcc aac agc acc cgc gcc act Ile Ser Asn Gln Pro Gly Glu Gly Ala Asn Ser Thr Arg Ala Thr	530	535	540	1753

gtg cct ttc ccc ttc gac atc aag acc ctc atc atc gcc acc acc atg	1801		
Val Pro Phe Pro Phe Asp Ile Lys Thr Leu Ile Ile Ala Thr Thr Met			
545 550 555			
ggc ttc atc tct ttc ctg ggc gtc gtc ctc ttc tgc ctg gtg ctg ctg	1849		
Gly Phe Ile Ser Phe Leu Gly Val Val Leu Phe Cys Leu Val Leu Leu			
560 565 570			
ttt ctc tgg agc cgg ggc aag ggc aac aca aag cac aac atc gag atc	1897		
Phe Leu Trp Ser Arg Gly Lys Gly Asn Thr Lys His Asn Ile Glu Ile			
575 580 585			
gag tat gtg ccc cga aag tcg gac gca ggc atc agc tcc gcc gac gcg	1945		
Glu Tyr Val Pro Arg Lys Ser Asp Ala Gly Ile Ser Ser Ala Asp Ala			
590 595 600 605			
ccc cgc aag ttc aac atg aag atg ata tgaggccggg gcggggggca	1992		
Pro Arg Lys Phe Asn Met Lys Met Ile			
610			
gggacccccc ggcggccggg caggggaagg ggcctggccg ccacctgctc actctccagt	2052		
cctcccccacc tcctccctac cttctacac acgttcttt tctccctcc cgcctccgtc	2112		
ccctgctgccc cccgcgcagc cttcaccacc tgccctcctt ctaccaggac ctcagaagcc	2172		
cagacctggg gaccccacct acacaggggc attgacagac tggagttaa agccgacgaa	2232		
ccgacacgccc gcagagtcaa taattcaata aaaaagttac gaacttttc tgtaacttgg	2292		
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Ala Thr Gly Cys Pro Pro Arg Cys Glu Cys Ser Ala Gln Asp Arg Ala			
35 40 45			
Val Leu Cys His Arg Lys Arg Phe Val Ala Val Pro Glu Gly Ile Pro			
50 55 60			
Thr Glu Thr Arg Leu Leu Asp Leu Gly Lys Asn Arg Ile Lys Thr Leu			
65 70 75 80			
Asn Gln Asp Glu Phe Ala Ser Phe Pro His Leu Glu Glu Leu Glu Leu			
85 90 95			
Asn Glu Asn Ile Val Ser Ala Val Glu Pro Gly Ala Phe Asn Asn Leu			
100 105 110			
Phe Asn Leu Arg Thr Leu Gly Leu Arg Ser Asn Arg Leu Lys Leu Ile			
115 120 125			
Pro Leu Gly Val Phe Thr Gly Leu Ser Asn Leu Thr Lys Leu Asp Thr			
130 135 140			
Arg Glu Asn Lys Ile Val Ile Leu Leu Asp Tyr Met Phe Gln Asp Leu			
145 150 155 160			
Tyr Asn Leu Lys Ser Leu Glu Val Gly Asp Asn Asp Leu Val Tyr Ile			
165 170 175			
Ser His Arg Ala Phe Ser Gly Leu Asn Ser Leu Glu Gln Leu Thr Leu			

180	185	190													
Glu	Lys	Cys	Asn	Leu	Thr	Ser	Ile	Pro	Thr	Glu	Ala	Leu	Ser	His	Leu
195							200					205			
His	Gly	Leu	Ile	Val	Leu	Arg	Leu	Arg	His	Leu	Asn	Ile	Asn	Ala	Ile
210							215				220				
Arg	Asp	Tyr	Ser	Phe	Lys	Arg	Leu	Tyr	Arg	Leu	Lys	Val	Leu	Glu	Ile
225							230				235			240	
Ser	His	Trp	Pro	Tyr	Leu	Asp	Thr	Met	Thr	Pro	Asn	Cys	Leu	Tyr	Gly
							245				250			255	
Leu	Asn	Leu	Thr	Ser	Leu	Ser	Ile	Thr	His	Cys	Asn	Leu	Thr	Ala	Val
							260				265			270	
Pro	Tyr	Leu	Ala	Val	Arg	His	Leu	Val	Tyr	Leu	Arg	Phe	Leu	Asn	Leu
							275				280			285	
Ser	Tyr	Asn	Pro	Ile	Ser	Thr	Ile	Glu	Gly	Ser	Met	Leu	His	Glu	Leu
							290				295			300	
Leu	Arg	Leu	Gln	Glu	Ile	Gln	Leu	Val	Gly	Gly	Gln	Leu	Ala	Val	Val
							305				310			315	
Glu	Pro	Tyr	Ala	Phe	Arg	Gly	Leu	Asn	Tyr	Leu	Arg	Val	Leu	Asn	Val
							325				330			335	
Ser	Gly	Asn	Gln	Leu	Thr	Thr	Leu	Glu	Glu	Ser	Val	Phe	His	Ser	Val
							340				345			350	
Gly	Asn	Leu	Glu	Thr	Leu	Ile	Leu	Asp	Ser	Asn	Pro	Leu	Ala	Cys	Asp
							355				360			365	
Cys	Arg	Leu	Leu	Trp	Val	Phe	Arg	Arg	Arg	Trp	Arg	Leu	Asn	Phe	Asn
							370				375			380	
Arg	Gln	Gln	Pro	Thr	Cys	Ala	Thr	Pro	Glu	Phe	Val	Gln	Gly	Lys	Glu
							385				390			395	
Phe	Lys	Asp	Phe	Pro	Asp	Val	Leu	Leu	Pro	Asn	Tyr	Phe	Thr	Cys	Arg
							405				410			415	
Arg	Ala	Arg	Ile	Arg	Asp	Arg	Lys	Ala	Gln	Gln	Val	Phe	Val	Asp	Glu
							420				425			430	
Gly	His	Thr	Val	Gln	Phe	Val	Cys	Arg	Ala	Asp	Gly	Asp	Pro	Pro	Pro
							435				440			445	
Ala	Ile	Leu	Trp	Leu	Ser	Pro	Arg	Lys	His	Leu	Val	Ser	Ala	Lys	Ser
							450				455			460	
Asn	Gly	Arg	Leu	Thr	Val	Phe	Pro	Asp	Gly	Thr	Leu	Glu	Val	Arg	Tyr
							465				470			475	
Ala	Gln	Val	Gln	Asp	Asn	Gly	Thr	Tyr	Leu	Cys	Ile	Ala	Ala	Asn	Ala
							485				490			495	
Gly	Gly	Asn	Asp	Ser	Met	Pro	Ala	His	Leu	His	Val	Arg	Ser	Tyr	Ser
							500				505			510	
Pro	Asp	Trp	Pro	His	Gln	Pro	Asn	Lys	Thr	Phe	Ala	Phe	Ile	Ser	Asn
							515				520			525	
Gln	Pro	Gly	Glu	Gly	Glu	Ala	Asn	Ser	Thr	Arg	Ala	Thr	Val	Pro	Phe
							530				535			540	
Pro	Phe	Asp	Ile	Lys	Thr	Leu	Ile	Ile	Ala	Thr	Thr	Met	Gly	Phe	Ile
							545				550			555	
Ser	Phe	Leu	Gly	Val	Val	Leu	Phe	Cys	Leu	Val	Leu	Leu	Phe	Leu	Trp
							565				570			575	
Ser	Arg	Gly	Lys	Gly	Asn	Thr	Lys	His	Asn	Ile	Glu	Ile	Glu	Tyr	Val
							580				585			590	
Pro	Arg	Lys	Ser	Asp	Ala	Gly	Ile	Ser	Ser	Ala	Asp	Ala	Pro	Arg	Lys
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Met  
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gcg ggg tcg ccg ctg ctc tgg ggg ccg cg<sub>g</sub> gcc ggg ggc gtc ggc ctt 108  
 Ala Gly Ser Pro Leu Leu Trp Gly Pro Arg Ala Gly Gly Val Gly Leu  
                   5                  10                  15

ttg gtg ctg ctg ctc ggc ctg ttt cgg ccg ccc ccc gcg ctc tgc 156  
 Leu Val Leu Leu Leu Gly Leu Phe Arg Pro Pro Pro Ala Leu Cys  
           20                 25                 30

gcg ccg ccg gta aag gag ccc cgc ggc cta agc gca gcg tct ccg ccc 204  
 Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser Ala Ala Ser Pro Pro  
 35 40 45

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ttg gct gag act ggc gct cct cgc cgc ttc cgg cgg tca gtg ccc cga      252
Leu Ala Glu Thr Gly Ala Pro Arg Arg Phe Arg Arg Ser Val Pro Arg
   50          55          60          65
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ggt gag gcg gcg ggg gcg gtg cag gag ctg gcg cg<sub>g</sub> gcg ctg gcg cat 300  
 Gly Glu Ala Ala Gly Ala Val Gln Glu Leu Ala Arg Ala Leu Ala His  
 70 75 80

ctg ctg gag gcc gaa cgt cag gag cgg gcg cgg gcc gag gcg cag gag 348  
 Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg Ala Glu Ala Gln Glu  
 85 90 95

gct gag gat cag cag gcg cgc gtc ctg gcg cag ctg ctg cgc gtc tgg 396  
Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln Leu Leu Arg Val Trp  
100 105 110

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ggc gcc ccc cgc aac tct gat ccg gct ctg ggc ttg gac gac gac ccc 444
Gly Ala Pro Arg Asn Ser Asp Pro Ala Leu Gly Leu Asp Asp Asp Pro
115          120          125
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gac gcg cct gca gcg cag ctc gct cgc gct ctg ctc cgc gcc cgc ctt 492  
 Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu Leu Arg Ala Arg Leu  
 130 135 140 145

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gac cct gcc gcc cta gca gcc cag ctt gtc ccc gcg ccc gtc ccc gcc 540
Asp Pro Ala Ala Leu Ala Ala Gln Leu Val Pro Ala Pro Val Pro Ala
150          155          160

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gcg gcg ctc cga ccc cgg ccc ccg gtc tac gac gac ggc ccc gcg ggc 588  
 Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp Asp Gly Pro Ala Gly  
 165 170 175

ccg gat gct gag gag gca ggc gac gag aca ccc gac gtc gac ccc gag	636
Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro Asp Val Asp Pro Glu	
180 185 190	
ctg ttg agg tac ttg ctg gga cgg att ctt gcg gga agc gcg gac tcc	684
Leu Leu Arg Tyr Leu Leu Gly Arg Ile Leu Ala Gly Ser Ala Asp Ser	
195 200 205	
gag ggg gtg gca gcc ccg cgc cgc ctc cgc cgt gcc gcc gac cac gat	732
Glu Gly Val Ala Ala Pro Arg Arg Leu Arg Arg Ala Ala Asp His Asp	
210 215 220 225	
gtg ggc tct gag ctg ccc cct gag ggc gtg ctg ggg ggc ctg ctg cgt	780
Val Gly Ser Glu Leu Pro Pro Glu Gly Val Leu Gly Ala Leu Leu Arg	
230 235 240	
gtg aaa cgc cta gag acc ccg gcg ccc cag gtg cct gca cgc cgc ctc	828
Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val Pro Ala Arg Arg Leu	
245 250 255	
ttg cca ccc tgagcaactgc ccggatcccg tgcaccctgg gacccagaag	877
Leu Pro Pro	
260	
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Cys Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser Ala Ala Ser Pro	
35 40 45	
Pro Leu Ala Glu Thr Gly Ala Pro Arg Arg Phe Arg Arg Ser Val Pro	
50 55 60	
Arg Gly Glu Ala Ala Gly Ala Val Gln Glu Leu Ala Arg Ala Leu Ala	
65 70 75 80	
His Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg Ala Glu Ala Gln	
85 90 95	
Glu Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln Leu Leu Arg Val	
100 105 110	
Trp Gly Ala Pro Arg Asn Ser Asp Pro Ala Leu Gly Leu Asp Asp Asp	
115 120 125	
Pro Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu Leu Arg Ala Arg	
130 135 140	
Leu Asp Pro Ala Ala Leu Ala Ala Gln Leu Val Pro Ala Pro Val Pro	
145 150 155 160	
Ala Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp Asp Gly Pro Ala	
165 170 175	
Gly Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro Asp Val Asp Pro	
180 185 190	

Glu Leu Leu Arg Tyr Leu Leu Gly Arg Ile Leu Ala Gly Ser Ala Asp  
 195 200 205  
 Ser Glu Gly Val Ala Ala Pro Arg Arg Leu Arg Arg Ala Ala Asp His  
 210 215 220  
 Asp Val Gly Ser Glu Leu Pro Pro Glu Gly Val Leu Gly Ala Leu Leu  
 225 230 235 240  
 Arg Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val Pro Ala Arg Arg  
 245 250 255  
 Leu Leu Pro Pro  
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 <212> PRT  
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 Pro Gln Leu Cys Val Cys Glu Ile Arg Pro Trp Phe Thr Pro Gln Ser  
 35 40 45  
 Thr Tyr Arg Glu Ala Thr Thr Val Asp Cys Asn Asp Leu Arg Leu Thr  
 50 55 60  
 Arg Ile Pro Gly Asn Leu Ser Ser Asp Thr Gln Val Leu Leu Gln  
 65 70 75 80  
 Ser Asn Asn Ile Ala Lys Thr Val Asp Glu Leu Gln Gln Leu Phe Asn  
 85 90 95  
 Leu Thr Glu Leu Asp Phe Ser Gln Asn Asn Phe Thr Asn Ile Lys Glu  
 100 105 110  
 Val Gly Leu Ala Asn Leu Thr Gln Leu Thr Thr Leu His Leu Glu Glu  
 115 120 125  
 Asn Gln Ile Ser Glu Met Thr Asp Tyr Cys Leu Gln Asp Leu Ser Asn  
 130 135 140  
 Leu Gln Glu Leu Tyr Ile Asn His Asn Gln Ile Ser Thr Ile Ser Ala  
 145 150 155 160  
 Asn Ala Phe Ser Gly Leu Lys Asn Leu Leu Arg Leu His Leu Asn Ser  
 165 170 175  
 Asn Lys Leu Lys Val Ile Asp Ser Arg Trp Phe Asp Ser Thr Pro Asn  
 180 185 190  
 Leu Glu Ile Leu Met Ile Gly Glu Asn Pro Val Ile Gly Ile Leu Asp  
 195 200 205  
 Met Asn Phe Arg Pro Leu Ser Asn Leu Arg Ser Leu Val Leu Ala Gly  
 210 215 220  
 Met Tyr Leu Thr Asp Val Pro Gly Asn Ala Leu Val Gly Leu Asp Ser  
 225 230 235 240  
 Leu Glu Ser Leu Ser Phe Tyr Asp Asn Lys Leu Ile Lys Val Pro Gln  
 245 250 255  
 Leu Ala Leu Gln Lys Val Pro Asn Leu Lys Phe Leu Asp Leu Asn Lys  
 260 265 270  
 Asn Pro Ile His Lys Ile Gln Glu Gly Asp Phe Lys Asn Met Leu Arg  
 275 280 285  
 Leu Lys Glu Leu Gly Ile Asn Asn Met Gly Glu Leu Val Ser Val Asp  
 290 295 300  
 Arg Tyr Ala Leu Asp Asn Leu Pro Glu Leu Thr Lys Leu Glu Ala Thr  
 305 310 315 320

Asn Asn Pro Lys Leu Ser Tyr Ile His Arg Leu Ala Phe Arg Ser Val  
                   325                  330                  335  
 Pro Ala Leu Glu Ser Leu Met Leu Asn Asn Asn Ala Leu Asn Ala Val  
                   340                  345                  350  
 Tyr Gln Lys Thr Val Glu Ser Leu Pro Asn Leu Arg Glu Ile Ser Ile  
                   355                  360                  365  
 His Ser Asn Pro Leu Arg Cys Asp Cys Val Ile His Trp Ile Asn Ser  
                   370                  375                  380  
 Asn Lys Thr Asn Ile Arg Phe Met Glu Pro Leu Ser Met Phe Cys Ala  
                   385                  390                  395                  400  
 Met Pro Pro Glu Tyr Arg Gly Gln Gln Val Lys Glu Val Leu Ile Gln  
                   405                  410                  415  
 Asp Ser Ser Glu Gln Cys Leu Pro Met Ile Ser His Asp Thr Phe Pro  
                   420                  425                  430  
 Asn His Leu Asn Met Asp Ile Gly Thr Thr Leu Phe Leu Asp Cys Arg  
                   435                  440                  445  
 Ala Met Ala Glu Pro Glu Pro Glu Ile Tyr Trp Val Thr Pro Ile Gly  
                   450                  455                  460  
 Asn Lys Ile Thr Val Glu Thr Leu Ser Asp Lys Tyr Lys Leu Ser Ser  
                   465                  470                  475                  480  
 Glu Gly Thr Leu Glu Ile Ala Asn Ile Gln Ile Glu Asp Ser Gly Arg  
                   485                  490                  495  
 Tyr Thr Cys Val Ala Gln Asn Val Gln Gly Ala Asp Thr Arg Val Ala  
                   500                  505                  510  
 Thr Ile Lys Val Asn Gly Thr Leu Leu Asp Gly Ala Gln Val Leu Lys  
                   515                  520                  525  
 Ile Tyr Val Lys Gln Thr Glu Ser His Ser Ile Leu Val Ser Trp Lys  
                   530                  535                  540  
 Val Asn Ser Asn Val Met Thr Ser Asn Leu Lys Trp Ser Ser Ala Thr  
                   545                  550                  555                  560  
 Met Lys Ile Asp Asn Pro His Ile Thr Tyr Thr Ala Arg Val Pro Val  
                   565                  570                  575  
 Asp Val His Glu Tyr Asn Leu Thr His Leu Gln Pro Ser Thr Asp Tyr  
                   580                  585                  590  
 Glu Val Cys Leu Thr Val Ser Asn Ile His Gln Gln Thr Gln Lys Ser  
                   595                  600                  605  
 Cys Val Asn Val Thr Thr Lys Thr Ala Ala Phe Ala Leu Asp Ile Ser  
                   610                  615                  620  
 Asp His Glu Thr Ser Thr Ala Leu Ala Ala Val Met Gly Ser Met Phe  
                   625                  630                  635                  640  
 Ala Val Ile Ser Leu Ala Ser Ile Ala Ile Tyr Ile Ala Lys Arg Phe  
                   645                  650                  655  
 Lys Arg Lys Asn Tyr His His Ser Leu Lys Lys Tyr Met Gln Lys Thr  
                   660                  665                  670  
 Ser Ser Ile Pro Leu Asn Glu Leu Tyr Pro Pro Leu Ile Asn Leu Trp  
                   675                  680                  685  
 Glu Ala Asp Ser Asp Lys Asp Lys Asp Gly Ser Ala Asp Thr Lys Pro  
                   690                  695                  700  
 Thr Gln Val Asp Thr Ser Arg Ser Tyr Tyr  
                   705                  710

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 <212> PRT  
 <213> Mus musculus

<400> 8

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 Gln His Asn Pro Pro Ser Asp Arg Asp Ala Glu His Tyr Asp Thr Ala  
 35 40 45  
 Ile Leu Phe Thr Arg Gln Asp Leu Cys Gly Ser Gln Thr Cys Asp Thr  
 50 55 60  
 Leu Gly Met Ala Asp Val Gly Thr Val Cys Asp Pro Ser Arg Ser Cys  
 65 70 75 80  
 Ser Val Ile Glu Asp Asp Gly Leu Gln Ala Ala Phe Thr Thr Ala His  
 85 90 95  
 Glu Leu Gly His Val Phe Asn Met Pro His Asp Asp Ala Lys Gln Cys  
 100 105 110  
 Ala Ser Leu Asn Gly Val Asn Gln Asp Ser His Met Met Ala Ser Met  
 115 120 125  
 Leu Ser Asn Leu Asp His Ser Gln Pro Trp Ser Pro Cys Ser Ala Tyr  
 130 135 140  
 Met Ile Thr Ser Phe Leu Asp Asn Gly His Gly Glu Cys Leu Met Asp  
 145 150 155 160  
 Lys Pro Gln Asn Pro Ile Gln Leu Pro Gly Asp Leu Pro Gly Thr Ser  
 165 170 175  
 Tyr Asp Ala Asn Arg Gln Cys Gln Phe Thr Phe Gly Glu Asp Ser Lys  
 180 185 190  
 His Cys Pro Asp Ala Ala Ser Thr Cys Ser Thr Leu Trp Cys Thr Gly  
 195 200 205  
 Thr Ser Gly Gly Val Leu Val Cys Gln Thr Lys His Phe Pro Trp Ala  
 210 215 220  
 Asp Gly Thr Ser Cys Gly Glu Gly Lys Trp Cys Ile Asn Gly Lys Cys  
 225 230 235 240  
 Val Asn Lys Thr Asp Arg Lys His Phe Asp Thr Pro Phe His Gly Ser  
 245 250 255  
 Trp Gly Met Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly  
 260 265 270  
 Gly Val Gln Tyr Thr Met Arg Glu Cys Asp Asn Pro Val Pro Lys Asn  
 275 280 285  
 Gly Gly Lys Tyr Cys Glu Gly Lys Arg Val Arg Tyr Arg Ser Cys Asn  
 290 295 300  
 Leu Glu Asp Cys Pro Asp Asn Asn Gly Lys Thr Phe Arg Glu Glu Gln  
 305 310 315 320  
 Cys Glu Ala His Asn Glu Phe Ser Lys Ala Ser Phe Gly Ser Gly Pro  
 325 330 335  
 Ala Val Glu Trp Ile Pro Lys Tyr Ala Gly Val Ser Pro Lys Asp Arg  
 340 345 350  
 Cys Lys Leu Ile Cys Gln Ala Lys Gly Ile Gly Tyr Phe Phe Val Leu  
 355 360 365  
 Gln Pro Lys Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser Thr Ser  
 370 375 380  
 Val Cys Val Gln Gly Gln Cys Val Lys Ala Gly Cys Asp Arg Ile Ile  
 385 390 395 400  
 Asp Ser Lys Lys Lys Phe Asp Lys Cys Gly Val Cys Gly Gly Asn Gly  
 405 410 415  
 Ser Thr Cys Lys Lys Ile Ser Gly Ser Val Thr Ser Ala Lys Pro Gly  
 420 425 430  
 Tyr His Asp Ile Ile Thr Ile Pro Ile Gly Ala Thr Asn Ile Glu Val  
 435 440 445  
 Lys Gln Arg Asn Gln Arg Gly Ser Arg Asn Asn Gly Ser Phe Leu Ala

450	455	460	
Ile Lys Ala Ala Asp Gly Thr Tyr Ile Leu Asn Gly Asp Tyr Thr Leu			
465	470	475	
Ser Thr Leu Glu Gln Asp Ile Met Tyr Lys Gly Val Val Leu Arg Tyr		480	
485	490	495	
Ser Gly Ser Ser Ala Ala Leu Glu Arg Ile Arg Ser Phe Ser Pro Leu			
500	505	510	
Lys Glu Pro Leu Thr Ile Gln Val Leu Thr Val Gly Asn Ala Leu Arg			
515	520	525	
Pro Lys Ile Lys Tyr Thr Tyr Phe Val Lys Lys Lys Glu Ser Phe			
530	535	540	
Asn Ala Ile Pro Thr Phe Ser Ala Trp Val Ile Glu Glu Trp Gly Glu			
545	550	555	560
Cys Ser Lys Thr Cys Gly Lys Gly Tyr Lys Lys Arg Ser Leu Lys Cys			
565	570	575	
Leu Ser His Asp Gly Gly Val Leu Ser His Glu Ser Cys Asp Pro Leu			
580	585	590	
Lys Lys Pro Lys His Phe Ile Asp Phe Cys Thr Met Ala Glu Cys Ser			
595	600	605	

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&lt;211&gt; 3145

&lt;212&gt; DNA

&lt;213&gt; Mus musculus

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (9) ... (1562)

&lt;400&gt; 9

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Met Val Thr Ser Phe Leu Asp Asn Gly His Gly Glu Cys Leu			
1	5	10	

atg gac aag ccc cag aat cca atc aag ctc cct tct gat ctt ccc ggt			98
Met Asp Lys Pro Gln Asn Pro Ile Lys Leu Pro Ser Asp Leu Pro Gly			
15	20	25	30

acc ttg tac gat gcc aac cgc cag tgt cag ttt aca ttc gga gag gaa			146
Thr Leu Tyr Asp Ala Asn Arg Gln Cys Gln Phe Thr Phe Gly Glu Glu			
35	40	45	

tcc aag cac tgc cct gat gca gcc agc aca tgt act acc ctg tgg tgc			194
Ser Lys His Cys Pro Asp Ala Ala Ser Thr Cys Thr Thr Leu Trp Cys			
50	55	60	

act ggc acc tcc ggt ggc tta ctg gtg tgc caa aca aaa cac ttc cct			242
Thr Gly Thr Ser Gly Gly Leu Leu Val Cys Gln Thr Lys His Phe Pro			
65	70	75	

tgg gca gat ggc acc agc tgt gga gaa ggg aag tgg tgt gtc agt ggc			290
Trp Ala Asp Gly Thr Ser Cys Gly Glu Gly Lys Trp Cys Val Ser Gly			
80	85	90	

aag tgc gtg aac aag aca gac atg aag cat ttt gct act cct gtt cat			338
Lys Cys Val Asn Lys Thr Asp Met Lys His Phe Ala Thr Pro Val His			
95	100	105	110

gga agc tgg gga cca tgg gga ccg tgg gga gac tgc tca aga acc tgt			386
Gly Ser Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys			
115	120	125	
ggt ggt gga gtt caa tac aca atg aga gaa tgt gac aac cca gtc cca			434
Gly Gly Gly Val Gln Tyr Thr Met Arg Glu Cys Asp Asn Pro Val Pro			
130	135	140	
aag aac gga ggg aag tac tgt gaa ggc aaa cga gtc cgc tac agg tcc			482
Lys Asn Gly Gly Lys Tyr Cys Glu Gly Lys Arg Val Arg Tyr Arg Ser			
145	150	155	
tgt aac atc gag gac tgt cca gac aat aac gga aaa acg ttc aga gag			530
Cys Asn Ile Glu Asp Cys Pro Asp Asn Asn Gly Lys Thr Phe Arg Glu			
160	165	170	
gag cag tgc gag gcg cac aat gag ttt tcc aaa gct tcc ttt ggg aat			578
Glu Gln Cys Glu Ala His Asn Glu Phe Ser Lys Ala Ser Phe Gly Asn			
175	180	185	190
gag ccc act gta gag tgg aca ccc aag tac gcc ggc gtc tcg cca aag			626
Glu Pro Thr Val Glu Trp Thr Pro Lys Tyr Ala Gly Val Ser Pro Lys			
195	200	205	
gac agg tgc aag ctc acc tgt gaa gcc aaa ggc att ggc tac ttt ttc			674
Asp Arg Cys Lys Leu Thr Cys Glu Ala Lys Gly Ile Gly Tyr Phe Phe			
210	215	220	
gtc tta cag ccc aag gtt gta gat ggc act ccc tgt agt cca gac tct			722
Val Leu Gln Pro Lys Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser			
225	230	235	
acc tct gtc tgt gtg caa ggg cag tgt gtg aaa gct ggc tgt gat cgc			770
Thr Ser Val Cys Val Gln Gly Gln Cys Val Lys Ala Gly Cys Asp Arg			
240	245	250	
atc ata gac tcc aaa aag aag ttt gat aag tgt ggc gtt tgt gga gga			818
Ile Ile Asp Ser Lys Lys Phe Asp Lys Cys Gly Val Cys Gly Gly			
255	260	265	270
aac ggt tcc aca tgc aag aag atg tca gga ata gtc act agt aca aga			866
Asn Gly Ser Thr Cys Lys Lys Met Ser Gly Ile Val Thr Ser Thr Arg			
275	280	285	
cct ggg tat cat gac att gtc aca att cct gct gga gcc acc aac att			914
Pro Gly Tyr His Asp Ile Val Thr Ile Pro Ala Gly Ala Thr Asn Ile			
290	295	300	
gaa gtg aaa cat cgg aat caa agg ggg tcc aga aac aat ggc agc ttt			962
Glu Val Lys His Arg Asn Gln Arg Gly Ser Arg Asn Asn Gly Ser Phe			
305	310	315	
ctg gct att aga gcc gct gat ggt acc tat att ctg aat gga aac ttc			1010
Leu Ala Ile Arg Ala Ala Asp Gly Thr Tyr Ile Leu Asn Gly Asn Phe			
320	325	330	

act ctg tcc aca cta gag caa gac ctc acc tac aaa ggt act gtc tta	1058
Thr Leu Ser Thr Leu Glu Gln Asp Leu Thr Tyr Lys Gly Thr Val Leu	
335 340 345 350	
agg tac agt ggt tcc tcg gct gcg ctg gaa aga atc cgc agc ttt agt	1106
Arg Tyr Ser Gly Ser Ser Ala Ala Leu Glu Arg Ile Arg Ser Phe Ser	
355 360 365	
cca ctc aaa gaa ccc tta acc atc cag gtt ctt atg gta ggc cat gct	1154
Pro Leu Lys Glu Pro Leu Thr Ile Gln Val Leu Met Val Gly His Ala	
370 375 380	
ctc cga ccc aaa att aaa ttc acc tac ttt atg aag aag aca gag	1202
Leu Arg Pro Lys Ile Lys Phe Thr Phe Met Lys Lys Thr Glu	
385 390 395	
tca ttc aac gcc att ccc aca ttt tct gag tgg gtg att gaa gag tgg	1250
Ser Phe Asn Ala Ile Pro Thr Phe Ser Glu Trp Val Ile Glu Glu Trp	
400 405 410	
ggg gag tgc tcc aag aca tgc ggc tca ggt tgg cag aga aga gta gtg	1298
Gly Glu Cys Ser Lys Thr Cys Gly Ser Gly Trp Gln Arg Arg Val Val	
415 420 425 430	
cag tgc aga gac att aac gga cac cct gct tcc gaa tgt gca aag gaa	1346
Gln Cys Arg Asp Ile Asn Gly His Pro Ala Ser Glu Cys Ala Lys Glu	
435 440 445	
gtg aag cca gcc agt acc aga cct tgt gca gac ctt cct tgc cca cac	1394
Val Lys Pro Ala Ser Thr Arg Pro Cys Ala Asp Leu Pro Cys Pro His	
450 455 460	
tgg cag gtg ggg gat tgg tca cca tgt tcc aaa act tgc ggg aag ggt	1442
Trp Gln Val Gly Asp Trp Ser Pro Cys Ser Lys Thr Cys Gly Lys Gly	
465 470 475	
tac aag aag aga acc ttg aaa tgt gtg tcc cac gat ggg ggc gtg tta	1490
Tyr Lys Lys Arg Thr Leu Lys Cys Val Ser His Asp Gly Gly Val Leu	
480 485 490	
tca aat gag agc tgt gat cct ttg aag aag cca aag cat tac att gac	1538
Ser Asn Glu Ser Cys Asp Pro Leu Lys Lys Pro Lys His Tyr Ile Asp	
495 500 505 510	
ttt tgc aca ctg aca cag tgc agt taagaggcgt tagaggacaa ggtacgtgg	1592
Phe Cys Thr Leu Thr Gln Cys Ser	
515	
ggaggggctg atacactgag tgcaagagta ctggagggat ccagttagtc aaaccagtaa	1652
gcaatggatgttggcaagga ggtgtgtgttggggatacat agccaaaggag gtatgtcagg	1712
acactaccct gcccgttaca ttctgataag gtatgttgc aggcacatgttgc gcatctgaaa	1772
gaccatacag agcactaagg agccccaaag cactattgttgc atctcttttc ttatatctat	1832
cgcccaaata atttcagatgttgc gcccgttgc actgtactaa ctatgttgc	1892
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gcttgggttgcgttgc ggaagggttgc tgcatcatc ttatcaacag tgaaaaggttc	2072
agcttgggttca acgtgacacaa aaggctcattc tccgtgaaag agctcctgtat ttcttcttac	2132

accatctcag ttcttaacta tagttcatgt tgaggtagaa acaattcatc tatttataaa	2192
atgtacattg gaaaaaaaaa gtgaagttt tgaggcacat ataaaaactg aaggaaacaa	2252
tgagcaacat gcctcctgct ttgcttcctc ctgaggtaaa cctgcctggg gattgagggtt	2312
gtttaagatt atccatggct cacaagaggc agtaaaataa tacatgttgc gccagagtt	2372
gaatgggta tagagatcag ggtcccatga gatggggAAC atgggtatca ctcatctcac	2432
atgggaggct gctgcagggt agcagggtcca ctcctggcag ctggtccaa agtgcgtatcc	2492
tggtaatgt ctgttcagct cttctactga gagagaatat gactgtttcc atatgtatat	2552
gtatatagtt aaatatgtt ctatgaattt catgtacttt ataagtattt gtgtgtctgt	2612
tccttctaag aaggactata gtttataata aatgcctata ataacatatt tattttata	2672
catttatttc taatgataaa acctttaagt tatatcgctt ttgtaaaagt gcatataaaa	2732
atagagtatt tatacaatat atgttaacta gaaataataa aagaacactt ttgaatgtgt	2792
atgcctattt tctggagtgg gattaacttc tggcaagaa atctgtatgg acacaaacat	2852
tggacttcaa gacagttta aattttgggt aaatgaactg tatttcctgt ttatagacgt	2912
actaataaaa aagaagttga tcatgttctt agtggtaaga ttgttactaa tgggttggc	2972
aaattgctgt aaagagccag atagtaagca ttatggcat tggtaggctat ctttcctgccc	3032
acaaccatgt gacagttagt gctttgttagg actgagagca ggcataaaatg acatgtaaat	3092
gataaaactgt ggctgtgctt taataaaact ttatttacaa aaaaaaaaaaaa aaa	3145

&lt;210&gt; 10

&lt;211&gt; 518

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 10

Met Val Thr Ser Phe Leu Asp Asn Gly His Gly Glu Cys Leu Met Asp	
1 5 10 15	
Lys Pro Gln Asn Pro Ile Lys Leu Pro Ser Asp Leu Pro Gly Thr Leu	
20 25 30	
Tyr Asp Ala Asn Arg Gln Cys Gln Phe Thr Phe Gly Glu Glu Ser Lys	
35 40 45	
His Cys Pro Asp Ala Ala Ser Thr Cys Thr Thr Leu Trp Cys Thr Gly	
50 55 60	
Thr Ser Gly Gly Leu Leu Val Cys Gln Thr Lys His Phe Pro Trp Ala	
65 70 75 80	
Asp Gly Thr Ser Cys Gly Glu Gly Lys Trp Cys Val Ser Gly Lys Cys	
85 90 95	
Val Asn Lys Thr Asp Met Lys His Phe Ala Thr Pro Val His Gly Ser	
100 105 110	
Trp Gly Pro Trp Gly Pro Trp Gly Asp Cys Ser Arg Thr Cys Gly Gly	
115 120 125	
Gly Val Gln Tyr Thr Met Arg Glu Cys Asp Asn Pro Val Pro Lys Asn	
130 135 140	
Gly Gly Lys Tyr Cys Glu Gly Lys Arg Val Arg Tyr Arg Ser Cys Asn	
145 150 155 160	
Ile Glu Asp Cys Pro Asp Asn Asn Gly Lys Thr Phe Arg Glu Glu Gln	
165 170 175	
Cys Glu Ala His Asn Glu Phe Ser Lys Ala Ser Phe Gly Asn Glu Pro	
180 185 190	
Thr Val Glu Trp Thr Pro Lys Tyr Ala Gly Val Ser Pro Lys Asp Arg	
195 200 205	
Cys Lys Leu Thr Cys Glu Ala Lys Gly Ile Gly Tyr Phe Val Leu	
210 215 220	
Gln Pro Lys Val Val Asp Gly Thr Pro Cys Ser Pro Asp Ser Thr Ser	
225 230 235 240	
Val Cys Val Gln Gly Gln Cys Val Lys Ala Gly Cys Asp Arg Ile Ile	
245 250 255	
Asp Ser Lys Lys Phe Asp Lys Cys Gly Val Cys Gly Asn Gly	

260	265	270	
Ser Thr Cys Lys Lys Met Ser Gly Ile Val Thr Ser Thr Arg Pro Gly			
275	280	285	
Tyr His Asp Ile Val Thr Ile Pro Ala Gly Ala Thr Asn Ile Glu Val			
290	295	300	
Lys His Arg Asn Gln Arg Gly Ser Arg Asn Asn Gly Ser Phe Leu Ala			
305	310	315	320
Ile Arg Ala Ala Asp Gly Thr Tyr Ile Leu Asn Gly Asn Phe Thr Leu			
325	330	335	
Ser Thr Leu Glu Gln Asp Leu Thr Tyr Lys Gly Thr Val Leu Arg Tyr			
340	345	350	
Ser Gly Ser Ser Ala Ala Leu Glu Arg Ile Arg Ser Phe Ser Pro Leu			
355	360	365	
Lys Glu Pro Leu Thr Ile Gln Val Leu Met Val Gly His Ala Leu Arg			
370	375	380	
Pro Lys Ile Lys Phe Thr Tyr Phe Met Lys Lys Lys Thr Glu Ser Phe			
385	390	395	400
Asn Ala Ile Pro Thr Phe Ser Glu Trp Val Ile Glu Glu Trp Gly Glu			
405	410	415	
Cys Ser Lys Thr Cys Gly Ser Gly Trp Gln Arg Arg Val Val Gln Cys			
420	425	430	
Arg Asp Ile Asn Gly His Pro Ala Ser Glu Cys Ala Lys Glu Val Lys			
435	440	445	
Pro Ala Ser Thr Arg Pro Cys Ala Asp Leu Pro Cys Pro His Trp Gln			
450	455	460	
Val Gly Asp Trp Ser Pro Cys Ser Lys Thr Cys Gly Lys Gly Tyr Lys			
465	470	475	480
Lys Arg Thr Leu Lys Cys Val Ser His Asp Gly Gly Val Leu Ser Asn			
485	490	495	
Glu Ser Cys Asp Pro Leu Lys Lys Pro Lys His Tyr Ile Asp Phe Cys			
500	505	510	
Thr Leu Thr Gln Cys Ser			
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<210> 11
<211> 1110
<212> DNA
<213> Mus musculus
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<220>  
<221> CDS  
<222> (323) ... (1108)

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 Gly Met Arg Ser Met Pro Ser Pro Leu Leu Ala Cys Trp Gln Pro Ile  
 15 20 25

ctc ctg ctg gta ctg ggc tca gtg ctg tca ggc tct gct aca ggc tgc	448
Leu Leu Leu Val Leu Gly Ser Val Leu Ser Gly Ser Ala Thr Gly Cys	
30 35 40	
ccg ccc cgc tgc gag tgc tca gcg cag gac cga gcc gtg ctc tgc cac	496
Pro Pro Arg Cys Glu Cys Ser Ala Gln Asp Arg Ala Val Leu Cys His	
45 50 55	
cgc aaa cgc ttt gtg gcg gtg ccc gag qgc atc ccc acc gag act cgc	544
Arg Lys Arg Phe Val Ala Val Pro Glu Gly Ile Pro Thr Glu Thr Arg	
60 65 70	
ctg ctg gac ctg ggc aaa aac cgc atc aag aca ctc aac cag gac gag	592
Leu Leu Asp Leu Gly Lys Asn Arg Ile Lys Thr Leu Asn Gln Asp Glu	
75 80 85 90	
ttt gcc agc ttc cca cac ctg gag gag cta gaa ctc aat gaa aac atc	640
Phe Ala Ser Phe Pro His Leu Glu Glu Leu Glu Leu Asn Glu Asn Ile	
95 100 105	
gtg agc gcc gtg gag cca ggc gcc ttc aac aac ctc ttc aac ctg agg	688
Val Ser Ala Val Glu Pro Gly Ala Phe Asn Asn Leu Phe Asn Leu Arg	
110 115 120	
act ctg ggg ctg cgc agc aac cgc ctg aag ctt atc ccg ctg ggc gtc	736
Thr Leu Gly Leu Arg Ser Asn Arg Leu Lys Leu Ile Pro Leu Gly Val	
125 130 135	
ttc acc ggc ctc agc aac ttg acc aag ctg gac atc agt gag aac aag	784
Phe Thr Gly Leu Ser Asn Leu Thr Lys Leu Asp Ile Ser Glu Asn Lys	
140 145 150	
atc gtc atc ctg cta gac tac atg ttc caa gac cta tac aac ctc aag	832
Ile Val Ile Leu Leu Asp Tyr Met Phe Gln Asp Leu Tyr Asn Leu Lys	
155 160 165 170	
tcg ctg gag gtc ggc gac aac gac ctc gtc tac atc tcc cat cga gcc	880
Ser Leu Glu Val Gly Asp Asn Asp Leu Val Tyr Ile Ser His Arg Ala	
175 180 185	
ttc agc ggc ctc aac agc ctg gaa cag ctg acg ctg gag aaa tgc aat	928
Phe Ser Gly Leu Asn Ser Leu Glu Gln Leu Thr Leu Glu Lys Cys Asn	
190 195 200	
ctg acc tcc atc ccc acg gag gcg ctc tcc cac ctg cac ggc ctc atc	976
Leu Thr Ser Ile Pro Thr Glu Ala Leu Ser His Leu His Gly Leu Ile	
205 210 215	
gtc ctg cgg cta cga cat ctc aac atc aat gcc atc agg gac tac tcc	1024
Val Leu Arg Leu Arg His Leu Asn Ile Asn Ala Ile Arg Asp Tyr Ser	
220 225 230	
ttc aag agg ctg tac cga ctt aag gtc tta gag atc tcc cac tgg ccc	1072
Phe Lys Arg Leu Tyr Arg Leu Lys Val Leu Glu Ile Ser His Trp Pro	
235 240 245 250	
tac ctg gac acc ata acc ccc cgg acg cgt ggg tcg ac	1110

Tyr Leu Asp Thr Ile Thr Pro Arg Thr Arg Gly Ser  
 255 260

<210> 12  
 <211> 262  
 <212> PRT  
 <213> Mus musculus

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 Ser Val Leu Ser Gly Ser Ala Thr Gly Cys Pro Pro Arg Cys Glu Cys  
 35 40 45  
 Ser Ala Gln Asp Arg Ala Val Leu Cys His Arg Lys Arg Phe Val Ala  
 50 55 60  
 Val Pro Glu Gly Ile Pro Thr Glu Thr Arg Leu Leu Asp Leu Gly Lys  
 65 70 75 80  
 Asn Arg Ile Lys Thr Leu Asn Gln Asp Glu Phe Ala Ser Phe Pro His  
 85 90 95  
 Leu Glu Glu Leu Glu Leu Asn Glu Asn Ile Val Ser Ala Val Glu Pro  
 100 105 110  
 Gly Ala Phe Asn Asn Leu Phe Asn Leu Arg Thr Leu Gly Leu Arg Ser  
 115 120 125  
 Asn Arg Leu Lys Leu Ile Pro Leu Gly Val Phe Thr Gly Leu Ser Asn  
 130 135 140  
 Leu Thr Lys Leu Asp Ile Ser Glu Asn Lys Ile Val Ile Leu Leu Asp  
 145 150 155 160  
 Tyr Met Phe Gln Asp Leu Tyr Asn Leu Lys Ser Leu Glu Val Gly Asp  
 165 170 175  
 Asn Asp Leu Val Tyr Ile Ser His Arg Ala Phe Ser Gly Leu Asn Ser  
 180 185 190  
 Leu Glu Gln Leu Thr Leu Glu Lys Cys Asn Leu Thr Ser Ile Pro Thr  
 195 200 205  
 Glu Ala Leu Ser His Leu His Gly Leu Ile Val Leu Arg Leu Arg His  
 210 215 220  
 Leu Asn Ile Asn Ala Ile Arg Asp Tyr Ser Phe Lys Arg Leu Tyr Arg  
 225 230 235 240  
 Leu Lys Val Leu Glu Ile Ser His Trp Pro Tyr Leu Asp Thr Ile Thr  
 245 250 255  
 Pro Arg Thr Arg Gly Ser  
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<210> 13  
 <211> 1027  
 <212> DNA  
 <213> Mus musculus

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 <221> CDS  
 <222> (106) ... (630)

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Met Ala Gly Ser  
1

ccg ctg ctc tgc ggg ccg cgg gcc ggg ggc gtc ggc att ttg gtg ctg	165
Pro Leu Leu Cys Gly Pro Arg Ala Gly Gly Val Gly Ile Leu Val Leu	
5 10 15 20	
ctg ctc ttg ggc ctt ctg agg ctg ccc acc ctg tca gcg agg ccc	213
Leu Leu Leu Gly Leu Leu Arg Leu Pro Pro Thr Leu Ser Ala Arg Pro	
25 30 35	
gtg aag gag ccc cgc agt ctg agc gca gca tcc gcg ccc ttg gtt gag	261
Val Lys Glu Pro Arg Ser Leu Ser Ala Ala Ser Ala Pro Leu Val Glu	
40 45 50	
acg agc act ccc ctc cgc ttg cgt cgg gcc gtg ccc cga gga gag gcg	309
Thr Ser Thr Pro Leu Arg Leu Arg Ala Val Pro Arg Gly Glu Ala	
55 60 65	
gcg ggt gcg gtg cag gag ctg gcg cgg ctg gcg cac ctg ctg gag	357
Ala Gly Ala Val Gln Glu Leu Ala Arg Ala Leu Ala His Leu Leu Glu	
70 75 80	
gcc gag aga cag gaa cgc gcg cgt gct gag gcg cag gag gct gag gat	405
Ala Glu Arg Gln Glu Arg Ala Arg Ala Glu Ala Gln Glu Ala Glu Asp	
85 90 95 100	
cag cag gcg cgt gtc ctg gcg cag ctg ctg cgc gcc tgg ggc tct ccg	453
Gln Gln Ala Arg Val Leu Ala Gln Leu Leu Arg Ala Trp Gly Ser Pro	
105 110 115	
cgt gcc tcg gac ccg ccc ttg gcc ccc gac gat gac ccg gac gct cca	501
Arg Ala Ser Asp Pro Pro Leu Ala Pro Asp Asp Asp Pro Asp Ala Pro	
120 125 130	
gct gca cag ctc gcc cgt gct ctg ctc cga gct cgc cta gac ccc ggc	549
Ala Ala Gln Leu Ala Arg Ala Leu Leu Arg Ala Arg Leu Asp Pro Gly	
135 140 145	
ccc cag tgt atg atg atg gcc cca ctg gcc cag acg tcg agg atg ccg	597
Pro Gln Cys Met Met Met Ala Pro Leu Ala Gln Thr Ser Arg Met Pro	
150 155 160	
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Ala Thr Arg Leu Leu Thr Trp Thr Leu Ser Cys	
165 170 175	
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gtggaccagg atttgggtcc cggaggccc cctgagaacg tactggggc tctgctacgc	770
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&lt;210&gt; 14

&lt;211&gt; 175

<212> PRT  
<213> *Mus musculus*

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      20          25          30
Ser Ala Arg Pro Val Lys Glu Pro Arg Ser Leu Ser Ala Ala Ser Ala
      35          40          45
Pro Leu Val Glu Thr Ser Thr Pro Leu Arg Leu Arg Arg Ala Val Pro
      50          55          60
Arg Gly Glu Ala Ala Gly Ala Val Gln Glu Leu Ala Arg Ala Leu Ala
      65          70          75          80
His Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg Ala Glu Ala Gln
      85          90          95
Glu Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln Leu Leu Arg Ala
      100         105         110
Trp Gly Ser Pro Arg Ala Ser Asp Pro Pro Leu Ala Pro Asp Asp Asp
      115         120         125
Pro Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu Leu Arg Ala Arg
      130         135         140
Leu Asp Pro Gly Pro Gln Cys Met Met Met Ala Pro Leu Ala Gln Thr
      145         150         155          160
Ser Arg Met Pro Ala Thr Arg Leu Leu Thr Trp Thr Leu Ser Cys
      165         170         175

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